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The pattern of expression of Mn and Cu-Zn superoxide dismutase varies among squamous cell cancers of the lung, larynx, and oral cavity.

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BACKGROUND: Despite the importance of reactive oxygen species (ROS) in the development of smoking-related cancers, little is known about the pattern of expression of ROS scavengers in these cancers. **METHODS:** In this present study, we examined the expression of manganese superoxide dismutase (Mn-SOD) and copper/zinc superoxide dismutase (Cu-Zn-SOD), which are essential enzymes that eliminate ROS, in squamous cell cancers (SCCs) of the lung (n = 12), larynx (n = 13), and oral cavity (n = 20). **RESULTS:** SCCs of larynx and oral cavity showed significantly enhanced immunohistochemical expression of Mn-SOD compared with the matched uninvolved epithelium. The higher expression of Mn-SOD was shown to be late and early events in the process of SCC development in the larynx and the oral cavity, respectively. The expression of Mn-SOD in SCCs of the lung was significantly lower compared with luminal cells of the uninvolved epithelium but not compared with basal cells or an average expression of SOD in basal and luminal cells. The expression of both Mn-SOD and cytoplasmic or nuclear Cu-Zn-SOD in bronchial epithelium adjacent to invasive cancer was significantly lower compared with its expression in the uninvolved bronchial epithelium away from cancer. This resulted in a significant difference in SOD expression between cancer and uninvolved bronchial epithelium away from cancer but not between cancer and uninvolved epithelium adjacent to cancer. **CONCLUSIONS:** There are significant differences in the expression of Mn-SOD and Cu-Zn-SOD among SCCs of the lung, larynx, and oral cavity. The results also suggest

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that variations in distance between cancer and uninvolved tissues evaluated could contribute to conflicting results of SOD expression.
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